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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:

Chenet, et al.

on:

METHOD AND INSTALLATION FOR  
MAKING AN OPTICAL FIBER

Serial Number: 10/030,959

International App. No.: PCT/FR00/01985

Filed On: January 9, 2002

) Group Art Unit: 1713  
)  
)  
)  
) Examiner: To Be Assigned  
)  
)  
)  
) Docket No. 493500.0029  
) (IXAS-133)

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Hartford, Connecticut, September 5, 2002

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

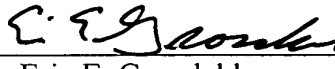
TRANSMITTAL OF TRANSLATED INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT, AND ANNEX THEREOF, UNDER PCT ARTICLE 36

In accordance with PCT Article 36(2)(b), Applicant submits herewith a  
translation of the International Preliminary Examination Report with Annex likewise  
translated.

No fee is believed to be required in connection with this paper; however, if any  
fee is required, or otherwise if necessary to cover any deficiency in fees already paid,  
authorization is hereby given to charge our deposit account no. 50-1631.

If there are any questions, or if any additional material or information is required, please call the undersigned at the telephone number below.

Respectfully submitted,

By   
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Translation

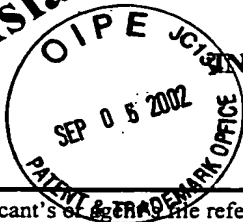
PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

6



|   |   |  |  |
|---|---|--|--|
| Applicant's or agent's file reference<br>BR1320/PCT                                       |   | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/FR00/01985   | International filing date (day/month/year)<br>07 July 2000 (07.07.00) | Priority date (day/month/year)<br>09 July 1999 (09.07.99)  |  |
| International Patent Classification (IPC) or national classification and IPC<br>D01F 8/10 |   |  |  |
| Applicant<br>OPTECTRON INDUSTRIES   |   |  |  |

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1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|  |  |
|--|--|
| Date of submission of the demand<br>30 January 2001 (30.01.01) | Date of completion of this report<br>17 August 2001 (17.08.2001) |
| Name and mailing address of the IPEA/EP                        | Authorized officer   |
| Facsimile No.  | Telephone No.  |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR00/01985

## I. Basis of the report

1. This report has been drawn on the basis of (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

- ☐ the international application as originally filed.
- ☒ the description, pages 2-17, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages 1, filed with the letter of 01 September 2000 (01.09.2000),  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☒ the claims, Nos. 1-17, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☒ the drawings, sheets/fig 1/1, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/FR 00/01985

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

|                               |        |      |     |
|-------------------------------|--------|------|-----|
| Novelty (N)                   | Claims | 1-17 | YES |
|                               | Claims |      | NO  |
| Inventive step (IS)           | Claims | 1-17 | YES |
|                               | Claims |      | NO  |
| Industrial applicability (IA) | Claims | 1-17 | YES |
|                               | Claims |      | NO  |

### 2. Citations and explanations

1. Reference is made to the following document:

D1: FR-A-2 493 997.

2. The batch process for producing an optical fiber made of a polymer, described as such in Claim 1, and the installation for carrying out the process, described as such in Claim 16, are not known from the prior art.

Therefore, the subject matter of Claims 1-17 is novel (PCT Article 33(2)).

3. Document D1 is considered the closest prior art. D1 describes a method for producing an optical fiber made of a polymer having a reduced degree of light attenuation.

The present invention is different from this by virtue of the preparation of the polymer, which is a suspension polymerization and not a bulk polymerization. Moreover, the method of the present invention is a batch process.

The use of a batch process in combination with a suspension polymerization is not part of the measures that a person skilled in the art would have

obviously considered taking in order to reduce light attenuation in an optical fiber.

Furthermore, this solution is not suggested in the prior art.

Therefore, the subject matter of Claims 1-17 involves an inventive step according to PCT Article 33(3).

4. The present invention meets the industrial applicability requirements of PCT Article 33(4).

**METHOD AND INSTALLATION FOR MAKING AN OPTICAL FIBRE**

The present invention relates to a process for the manufacture of an optical fiber made of polymers with low transmission losses, this fiber comprising a core and a sheath, the core being formed from a first polymer based on methyl methacrylate and optionally on another (meth)acrylic ester and the sheath being formed from a second polymer having a lower refractive index than that of the core.

The present invention also relates to a plant for the implementation of this process.

One of the problems encountered by manufacturers of optical fibers made of polymers is that of reducing to a minimum the amount of defect, impurities and dusts in the core polymer, as they absorb or scatter light and thus accentuate the weakening of the light transmitted in the optical fiber.

A known process for the manufacture of an optical fiber made of polymers consists first in preparing a solid cylindrical rod formed from a first polymer based on methyl methacrylate and then secondly in melt fiberizing this solid cylindrical rod by extrusion. The second polymer, which acts to form the sheath of the optical fiber, can be applied by coextrusion or coating from a solution.

Such a process is disclosed in particular in French patent No. 2 405 806. One of the difficulties of such a process is the production of a solid cylinder of the polymer of the core, which is prepared by radical bulk polymerization of purified methyl methacrylate. Complete control of the polymerization and in particular of the exchanges of heat is essential in order to prevent any formation of bubbles.

Another known process for the manufacture of an optical fiber made of polymers consists of a continuous process according to which the monomers for forming the core of the fiber, essentially methyl methacrylate, the polymerization initiator and the chain-transfer agent are distilled and purified under sealed or leaktight conditions. A polymerization vessel is subsequently filled with the materials thus distilled, and the radical bulk polymerization is carried out by heating under reduced pressure.